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The Genus *Falsotithassa* Pic (Coleoptera: Tenebrionidae), with Descriptions of New Oriental Species

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With 31 figures

Summary

New material of the tenebrionid genus *Falsotithassa* Pic 1934 (*Derispiolina* Kaszab 1979 **n.syn.**) from the Oriental region is presented including the descriptions of the new species *antennalis* **n.sp.** (Sulawesi), *convexicollis* **n.sp.** (Borneo), *grandis* **n.sp.** (Borneo), *philippina* **n.sp.** (Philippines) and *rotundipennis* **n.sp.** (Borneo). A species key is provided. The genus is assigned to the Diaperini. *F. grandis* **n.sp.** possesses interesting derived characters (male protibia internally with modified comb-like setae; antennomeres 4–10 with a few circles of short sensillae). At least some species show an unusual wing venation because the posterior veins form a series of closed cells.

Zusammenfassung

Neues Material der Tenebrioniden-Gattung *Falsotithassa* Pic 1934 (*Derispiolina* Kaszab 1979 **n.syn.**) aus der orientalischen Region wird präsentiert, einschließlich der Beschreibungen der neuen Arten *antennalis* **n.sp.** (Sulawesi), *convexicollis* **n.sp.** (Borneo), *grandis* **n.sp.** (Borneo), *philippina* **n.sp.** (Philippinen) und *rotundipennis* **n.sp.** (Borneo). Ein Bestimmungsschlüssel für die Arten wird beigefügt. Die Gattung wird zu den Diaperini gestellt. *F. grandis* **n.sp.** besitzt interessante abgeleitete Merkmale (männliche Protibia auf der Innenseite mit modifizierten kammartigen Setae, Antennenglieder 4–10 mit einigen kreisförmig angeordneten kurzen Sensillen). Überprüfte Arten zeigen ein ungewöhnliches Flügelgeäder, weil die hinteren Adern Serien von geschlossenen Zellen bilden.

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*) Contributions to Tenebrionidae, no. 27. – For no. 26 see: Acta zool. hung. 45: 143–148; 1999.

1. Introduction

The genus *Falsotithassa* Pic 1934 was based on the single species *sumatrana* Pic 1934 from Sumatra. Kaszab (1979) described the genus *Derispiolina* with the single species *pterolomoides* Kaszab 1979 from southern India. Later, Kaszab recognized its synonymy and placed both species under *Falsotithassa* in the collection of the Hungarian Museum of Natural History in Budapest, but did not publish this synonymy before his death in 1986. Nothing else has been reported about this genus.

New and numerous materials at hand induced me to treat this genus in a comprehensive way, to establish formally the synonymy of *Derispiolina* Kaszab 1979 with *Falsotithassa* Pic 1934, to present new faunistic data, to describe 5 further Oriental species and to sum up the diagnostic characters in a species key.

Nothing is know about the biology of these species. The adults are mostly collected by sifting of humid vegetation debris and lowland forest floor near water and are sometimes attracted by light during night. The larva are unknown. In the Himalayas *Falsotithassa sumatrana* is an element only of the lowland (subtropical) forests (remnants). At least some species occur sympatrically or even syntopically (*convexicollis* n.sp., *rotundipennis* n.sp. and *sumatrana* near Batu Punggul in Sabah, see materials).

Abbreviations

HNHM Hungarian Natural History Museum, Budapest;
MHNG Muséum d'Histoire Naturelle, Geneva;
NHMB Naturhistorisches Museum, Basel;
NKME Naturkundemuseum, Erfurt;
SMNS Staatliches Museum für Naturkunde, Stuttgart.

Acknowledgments

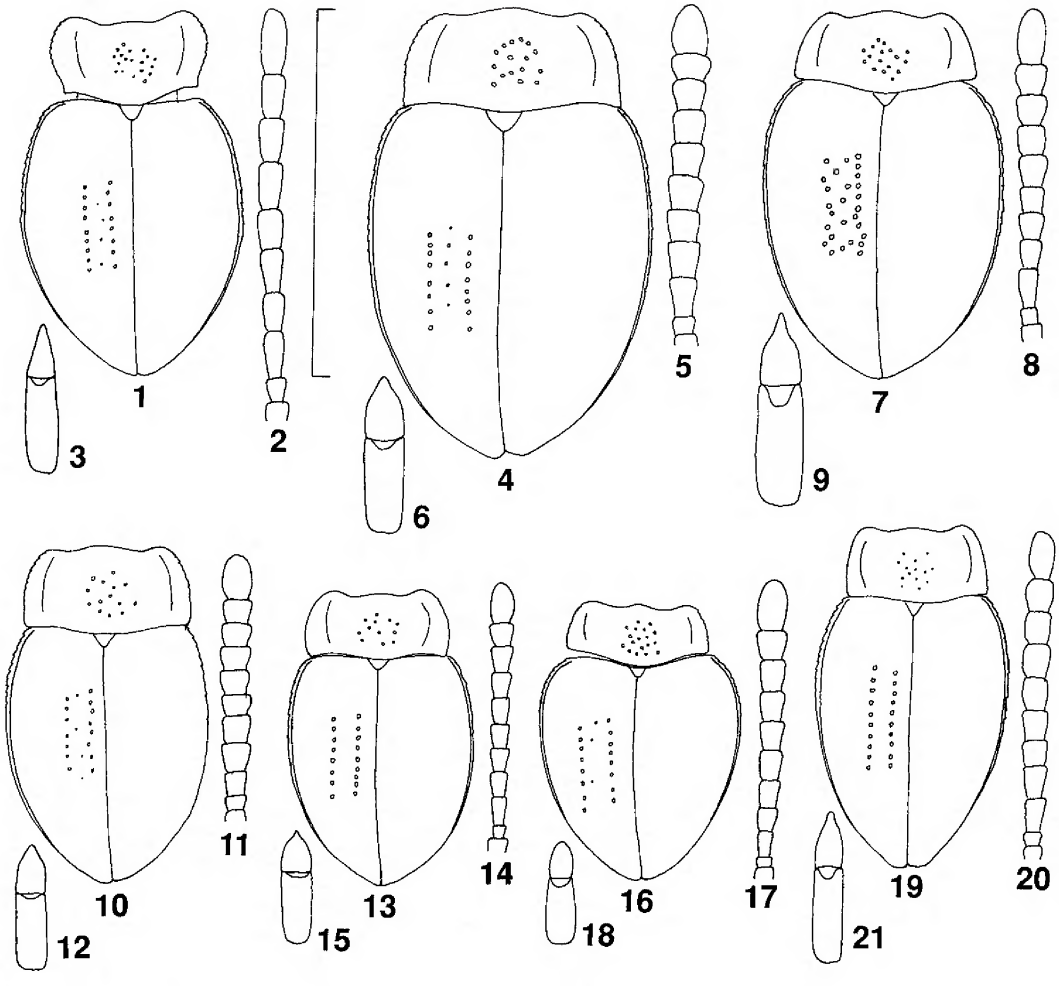
For the loan of material under their care I am indebted to Dr. D. Burckhardt (Basel), M. Hartmann (Erfurt), Dr. I. Löbl (Geneva) and Dr. O. Merkl (Budapest). Dr. E. Matthews (Adelaide) provided valuable comments on morphology and taxonomy. A. Riedel (Munich) deposited Tenebrionidae from his different collecting trips in the SMNS. S. Leidenroth (Stuttgart) helped with the SEM and produced the photographs.

2. Genus characters

Head with visible skin between clypeus and labrum; clypeal suture visible; eyes kidney-like and prominent; temples short; last segment of maxillary palps broad and triangular; antenna without club, antennomeres broad, antennomere 2 small, antennomere 3 somewhat prolonged. – Pronotum mostly with weak or distinct dentation of lateral margins (smooth in 2 species); basal margin completely bordered; propleures smooth. – Elytra with 10 rows of punctures, row 10 close to the lateral margin; elytral intervals with punctures of different size bearing long (1 species) or short erect setae; tip of elytra swollen and covering lateral margins; lateral margins distinctly dentated; distinct epipleures abruptly narrowed shortly before tip. – Wings fully developed, posterior veins form a series of closed cells (Figs 22–23). – Legs: Procoxal cavities internally open; tibiae without spines, round; protibiae internally with modified setae (in all species?); tarsal segments narrow and not dilatated. – Female tract without bursa, spermatheca at base of accessory gland, containing

check valve (MATTHEWS in litt.). – Aedeagus simple and similar in all species, basal piece tube-like and somewhat bent basally, joint parameres triangular or pentagonal with differently formed tip.

KASZAB (1979), when describing his *Derispiolina,* treated the difficulties in placing this genus to a tenebrionid tribe. He placed the genus provisionally among the Leiochrini, but using only similarities and not apomorphic characters. In fact, there is not a single character in *Falsotithassa* pointing definitely to the Leiochrini. Because of the combination of the above listed characters this genus is assigned here to the Diaperini, although the procoxal cavities are open. But this is a primitive character and *Falsotithassa* could be the only Diaperini with open procoxal cavities. The structure of the female tract is difficult to explain: In *Falsotithassa* the female tract does not have a bursa (a leiochrine feature) but it has a check valve (a diaperine feature).



Figs 1–21. Dorsal view, antenna and aedeagus of *Falsotithassa* species. – 1–3. *antennalis* n.sp., holotype; – 4–6. *grandis* n.sp., holotype; – 7–9. *pterolomoides,* paratype; – 10–12. *convexicollis* n.sp., holotype; – 13–15. *philippina* n.sp., holotype; – 16–18. *rotundipennis* n.sp., holotype; – 19–21. *sumatrana,* Borneo. – Scale: 4.0 mm (dorsal view), 2.0 mm (antenna, aedeagus).

The check valve seems to be more important and support the decision for the Diaperini, since a bursa can be easily lost in evolution (MATTHEWS in litt.).

The wing venation is quite unusual for Tenebrionidae but it is not quite sure if this is a generic character. The posterior veins form a series of closed cells (Fig. 22 in *grandis* n.sp., Fig. 23 in *sumatrana*); however, infraspecific variation of this character is unknown.

3. The species

3.1. *Falsotithassa antennalis* **n.sp.** (Figs 1–3)

Holotype (♂): C Sulawesi, Palu Palolo, Lindu NP, 25.–27. VIII. 1990 leg. RIEDEL, SMNS.
Paratype: Same data as holotype, 1 ex. SMNS.

Description: Body (Fig. 1) and appendages shining testaceous, antennomeres 4–10 somewhat darker; body length 4.2–4.3 mm. Head with same punctation as on pronotum; antennomeres see Fig. 2. Pronotum 1.8times wider than medially long, disc flat and without setation, widest in anterior third, lateral margins distinctly excavated before posterior angles; basal margin fully bordered, distal margin unbordered in the middle, lateral margins weakly dentated and with short erect hairs. Elytra 1.2times longer than broad; elytra with 10 regular rows of punctures, intervals weakly convex and with small punctures bearing short erect setae, the punctures of the elytral rows nearly of the same size as on pronotum (Fig. 1); lateral margin of elytra dentated and with short erect hairs. Aedeagus see Fig. 3, joint parameres triangular with straight sides and rounded tip.

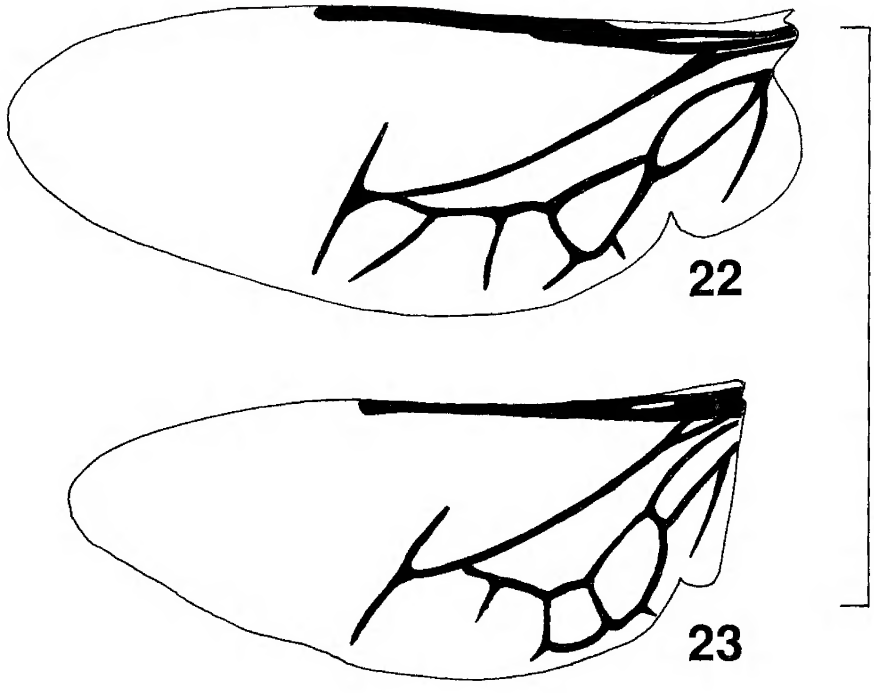
Diagnosis: To be recognized by the shape of the pronotum with the lateral margins distinctly excavated before the posterior angles, by the long antennae with the antennomeres 5–9 twice as long as wide and by the aedeagus with the joint parameres triangular with straight sides.

3.2. *Falsotithassa convexicollis* **n.sp.** (Figs 10–12)

Holotype (♂): Borneo, Sabah, Sapulut, Batu Punggul, 24.–26. VI. 1998 leg. KODADA & CIAMPOR, SMNS.
Paratypes: Same data as holotype, 1 ex. SMNS. Borneo, Sabah, Crocker Range, Bingkor N Keningau, 400–500 m, 19.–20. XI. 1996 leg. SCHAWALLER, 1 ex. SMNS. – Borneo, Sarawak, Belaga, 14.–16. III. 1990 leg. RIEDEL, 1 ex. SMNS.

Description: Body (Fig. 10) and appendages shining testaceous; body length 4.0–4.3 mm. Head with same punctation as on pronotum; antennomeres see Fig. 11. Pronotum 1.9times wider than medially long, disc convex and without setation, widest in the middle, lateral margins narrowed distinctly towards the anterior corners; basal margin fully bordered, distal margin unbordered in the middle, lateral margins weakly dentated and with short erect hairs. Elytra 1.2times longer than broad; elytra with 10 regular rows of punctures, intervals flat and with small punctures bearing short erect setae, the punctures of the elytral rows nearly of the same size as on pronotum (Fig. 10); lateral margin of elytra dentated and with short erect hairs. Aedeagus see Fig. 12, joint paramers pentagonal with rounded tip.

Diagnosis: This species shares with *grandis* n.sp. the convex pronotal disc but can be recognized by the smaller body size 4.0–4.3 mm (in *grandis* n.sp.



Figs 22–23. Wing venation of *Falsotithassa* species. – 22. *grandis* n.sp.; – 23. *sumatrana*. – Scale: 4.0 mm.

5.0–6.0 mm), by the naked pronotum and by the elytral intervals only with short setae (in *grandis* n.sp. pronotum and elytral intervals with long setae), by flat elytral intervals (in *grandis* n.sp. intervals slightly convex) and by the uniformly coloured elytra (in *grandis* n.sp. elytra with distal light patches).

3.3. *Falsotithassa grandis* **n.sp.** (Figs 4–6, 22, 24, 26–29)

Holotype (♂): Borneo, Sabah, Crocker Range, Gunung Alab, 1700 m, 23.–29. V. 1998 leg. Kodada & Ciampor, SMNS.

Paratypes: Same data as holotype, 16 ex. SMNS. – Borneo, Sabah, Crocker Range, km 56 of road Kota Kinabalu to Tambunan, 1100–1200 m, 8. VI. 1996 leg. ?, 2 ex. SMNS. – Borneo, Sabah, Crocker Range, km 51 of road Kota Kinabalu to Tambunan, 1600 m, 18. V. 1987 leg. Burckhardt & Löbl, 3 ex. MHNG. – Borneo, Sabah, Crocker Range, 1550–1650 m, 16. V. 1987 leg. Burckhardt & Löbl, 3 ex. MHNB. – Borneo, Sabah, Crocker Range, km 52 of road Kota Kinabalu to Tambunan, Gunung Emas, 23.–29. V. 1998 leg. Hlavac, 2 ex. HNHM. – Borneo, Sabah, Mt. Kinabalu NP Headquarters, Silau-Silau-Trail, 1540 m, 14. VIII.–1. IX. 1988 leg. Smetana, 1 ex. MHNG.

Description: Body (Fig. 4) and appendages shining testaceous, distal third of each elytron with a distinct, but indistinctly limited lighter patch; body length 5–6 mm. Head with same punctation as on pronotum; antennomeres see Fig. 5; antennomeres 4–10 with circles of short sensillae (Figs. 27–28). Pronotum 2.0times wider than medially long, disc convex and with short setation on most of the punctures and with distinctly long setation in a few punctures, widest in the middle, lateral margins narrowed distinctly towards the anterior corners; basal margin fully bordered, distal margin unbordered in the middle, lateral margins distinctly dentated and with short erect hairs. Elytra 1.2times longer than broad; elytra with 10 reg-

ular rows of punctures, intervals slightly convex and with some punctures of same size as in the rows bearing long erect setae, these elytral punctures nearly of the same size as on pronotum (Fig. 4); lateral margin of elytra dentated and with short erect hairs. Modified setation on protibia see Fig. 29. Aedeagus see Fig. 6, joint parameres pentagonal with rounded tip.

Diagnosis: To be recognized by the convex pronotal disc, by the body size of 5.0–6.0 mm and by the long setation on pronotum and elytral intervals. Similar and probably closer related is *convexicollis* n.sp. (see above).

Remarks: This species possesses 2 quite derived characters. The male protibia bears internally modified, comb-like setae (Fig. 29) and the antennomeres 4–10 possess besides the usual setation for mechanoreception a few circles of short sensillae (Fig. 27–28) of unknown function.

3.4. *Falsotithassa philippina* **n.sp.** (Figs 13–15)

Holotype (♂): Philippines, Leyte Island, Visayas State College N Baybay, 200–500 m, 22. II.–10. III. 1991 leg. SCHAWALLER, SMNS.

Paratypes: Same data as holotype, 13 ex. SMNS, 8 ex. HNHM. – Philippines, Leyte Island, Lake Danao, 500 m, 19. II.–8. III. 1991 leg. SCHAWALLER, 4 ex. SMNS. – Philippines, Leyte Island, SW Abuyog, 100–300 m, 8. III. 1991 leg. SCHAWALLER, 2 ex. SMNS.

Description: Body (Fig. 13) and appendages shining testaceous, antennomeres 3–10 somewhat darker; body length 3.3–4.5 mm. Head with same punctation as on pronotum; antennomeres see Fig. 14. Pronotum 2.2times wider than medially long, disc flat and without setation, widest in the middle, lateral margins narrowed towards the anterior corners; basal margin fully bordered, distal margin unbordered in the middle, lateral margins smooth and with short erect hairs. Elytra 1.2times longer than broad; elytra with 10 regular rows of punctures, intervals flat and without distinct punctures, only with scattered very small punctures bearing short erect setae, the punctures of the elytral rows about 4–5times as big as on pronotum (Fig. 13); lateral margin of elytra dentated and with short erect hairs. Aedeagus see Fig. 15, joint parameres triangular with somewhat extended tip.

Diagnosis: This species is quite similar as and probably closer related to *sumatrana,* both species share the fine punctation on the pronotum with the punctures of the elytral rows about 4–5times as big as on pronotum. They share also the smooth lateral margins of the pronotum. However, both can be separated by the shape of the pronotum with the pronotum widest in the middle and rounded lateral margins in *philippina* n.sp., in *sumatrana* pronotum widest in the anterior part and with straight lateral margins.

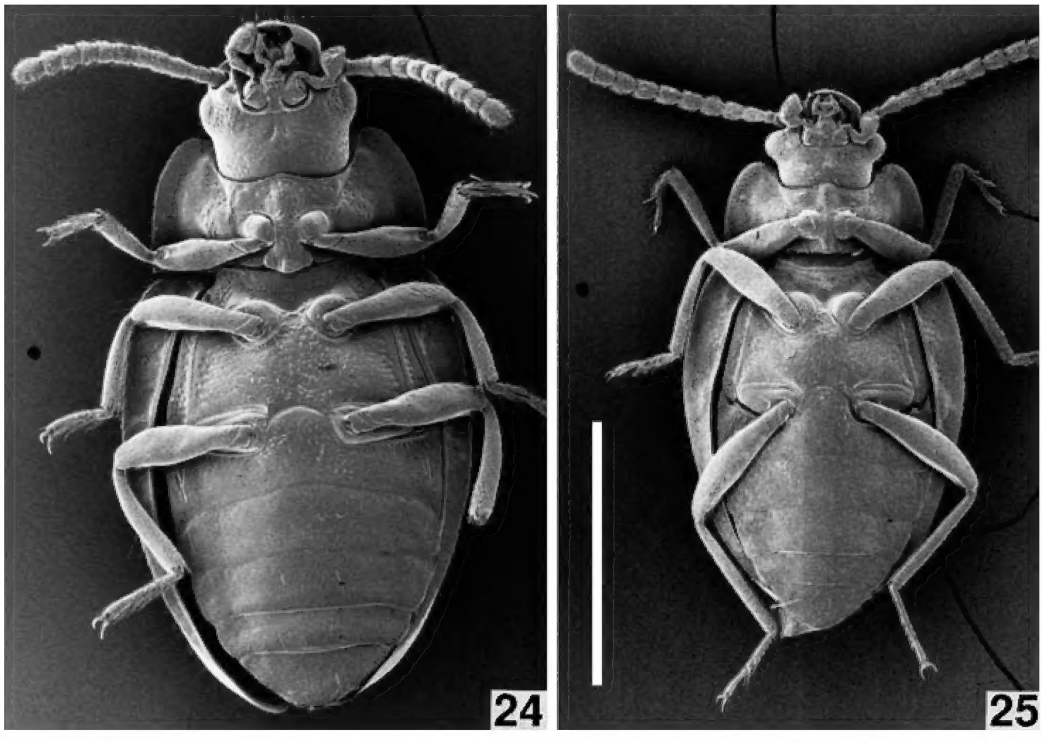
Additionally, the aedeagus is different with the joint parameres shorter and triangular in *philippina* n.sp. and longer and pentagonal in *sumatrana*.

3.5. *Falsotithassa pterolomoides* (Kaszab 1979) (Figs 7–9)

Type material: India, Madras, Anaimalai Hills, S Aliyar Dam, 550 m, 17. XI. 1972 leg. BESUCHET, LÖBL & MUSSARD, 23 paratypes HNHM.

Material: India, Kerala, Thekkady, Peryar, 2. IX. 1989 leg. RIEDEL, 2 ex. SMNS.

Redescription: Body (Fig. 7) and appendages shining testaceous, antennomeres 3–11 and disc of elytra often somewhat darker; body length 3.6–4.7 mm. Head with same punctation as on pronotum; antennomeres see Fig. 8. Pronotum



Figs 24–25. Ventral view of *Falsotithassa* species. – 24. *grandis* n.sp.; – 25. *sumatrana.* – Scale: 2.0 mm.

2.1times wider than medially long, disc flat and without setation, widest shortly before base, lateral margins narrowed distinctly towards the anterior corners; basal margin fully bordered, distal margin unbordered in the middle, lateral margins very weakly dentated and with short erect hairs. Elytra 1.3times longer than broad; elytra with 10 quite irregular rows of punctures, intervals flat and with several punctures of same size as in the rows bearing short erect setae, these elytral punctures about twice as big as on pronotum (Fig. 7); lateral margin of elytra dentated and with short erect hairs. Aedeagus see Fig. 9, joint parameres pentagonal with narrow and acute tip.

Diagnosis: To be recognized by the quite irregular rows of punctures on the elytra and by the elytral intervals with several big punctures of the same size as in the rows and by the shape of the aedeagus with the narrow and acute tip of the joint parameres.

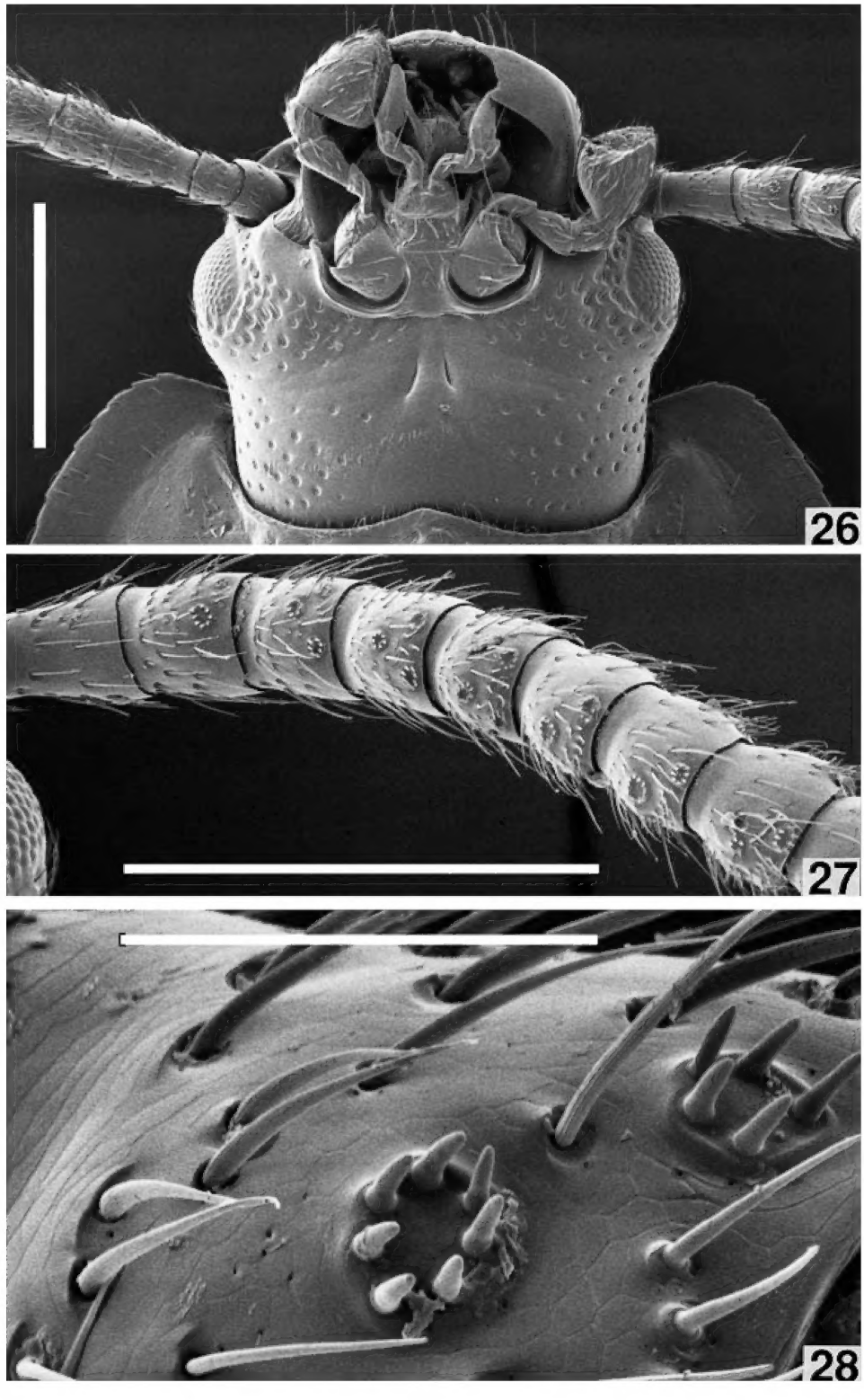
Distribution: India.

3.6. *Falsotithassa rotundipennis* **n.sp.** (Figs 16–18, 30)

Holotype (♂): Borneo, Sabah, Sapulut, Batu Punggul, 24.–26. VI. 1998 leg. KODADA & CIAMPOR, SMNS.

Paratypes: Borneo, Sabah, Batu Punggul Resort, 24. VI.–1. VII. 1986 leg. ?, 2 ex. MHNG. – Borneo, Sabah, Poring Hot Springs, Langanan Waterfall, 900–950 m, 12. V. 1987 leg. BURCKHARDT & LÖBL, 2 ex MHNG, 1 ex. SMNS.

Description: Body (Fig. 16) and appendages shining testaceous; body length 3.5–4.1mm. Head with same punctation as on pronotum; antennomeres see Fig. 17. Pronotum 2.1times wider than medially long, disc flat and without setation, widest



Figs 26–28. *Falsotithassa grandis* n.sp. – 26. Head, ventral view (Scale: 50 µm); – 27. antenna with circles of short sensillae (50 µm); – 28. sensillae on antenna (5 µm).

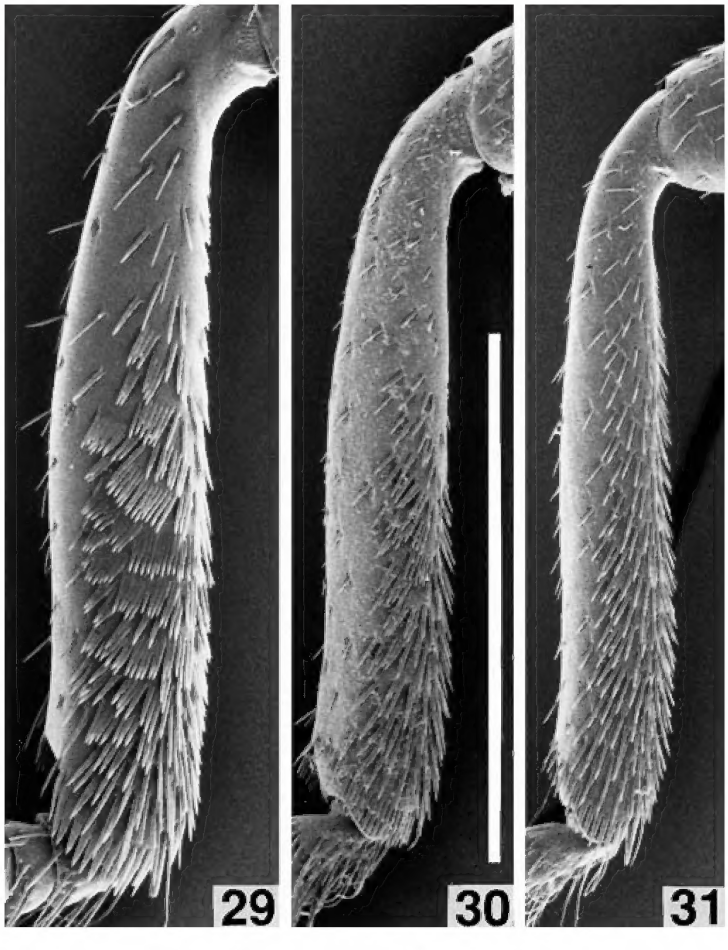
shortly before base, lateral margins narrowed towards the anterior corners; basal margin fully bordered, distal margin unbordered in the middle, lateral margins weakly dentated and with short erect hairs. Elytra 1.1times longer than broad; elytra with 10 regular rows of punctures, intervals convex and with small punctures bearing short erect setae, the punctures of the elytral rows nearly of the same size as on pronotum (Fig. 16); lateral margin of elytra dentated and with short erect hairs. Modified setation on protibia see Fig. 30. Aedeagus see Fig. 18, joint parameres spatula-like with broad tip.

Diagnosis: To be recognized by quite round elytra (in all other species elytra longish oval) and by the shape of the aedeagus with the joint parameres spatula-like with broad tip.

3.7. *Falsotithassa sumatrana* Pic 1934 (Figs. 19–21, 23, 25, 31)

Type material: Not seen.

Material: Borneo, Sabah, Sapulut, Batu Punggul, 24.–26. VI. 1998 leg. KODADA & CIAMPOR, 8 ex. SMNS. – Borneo, Sabah, Batu Punggul Resort, 24. VI.–1. VII. 1996 leg. ?, 5 ex. MHNG. – Borneo, Sabah, Poring Hot Springs, 520 m, 15. VIII. 1988 leg. SMETANA, 12 ex. MHNG, 2 ex. SMNS. – Borneo, Sabah, Crocker Range, Keningau, Taman Bandukan, 14. VI.



Figs 29–31. Male protibia of *Falsotithassa* species with modified setae. – 29. *grandis* n.sp.; – 30. *rotundipennis* n.sp.; – 31. *sumatrana*. – Scale: 50 µm.

1998 leg. KODADA & CIAMPOR, 1 ex. SMNS. – Borneo, Sabah, Crocker Range, Rafflesia Centre, 13.–14. VI. 1996 leg. ?, 4 ex. SMNS. – Nepal, Dhading Distr., Ankhu Khola valley, Ankhu Sangu, 650 m, 24.–25. VII. 1983 leg. MARTENS & SCHAWALLER, 1 ex. SMNS. – Nepal, Ilam Distr., Bibilate near Ilam, 1330 m, 8. IV. 1988 leg. MARTENS & SCHAWALLER, 1 ex. SMNS. – Nepal, Kathmandu, Swayambunath, 1400 m, 24. VI. 1997 leg. WEIGEL, 1 ex. NKME. – Bhutan, Kharbandi, 700 m, IX. 1975 leg. DORJEE KHANDU DUKPA, 1 ex. NHMB. – N Thailand, Soppong, 19.29N-98.18E, 750 m, 13. V. 1993 leg. BOCAK, 2 ex. SMNS. – Thailand, Nakhon Ratchasima, Khao Yai NP, 700–800 m, 22. IV. 1990 leg. FULLER, 1 ex. SMNS. – Malaysia, Pahang, Tioman Island, Gunung Tekek, 15.–26. VII. 1992 leg. SCHUH, 1 ex. SMNS. – Malaysia, Pahang, Cameron Highlands, Gunung Jasar, 1450 m, 24.–25. I. 1992 leg. SCHILLHAMMER, 1 ex. HNHM.

Redescription: Body (Fig. 19) and appendages shining testaceous, antennomeres 3–9 and disc of pronotum often somewhat darker; body length 3.5–4.5 mm. Head with same punctation as on pronotum; antennomeres see Fig. 20. Pronotum 1.9times wider than medially long, disc flat and without setation, widest in anterior third, lateral margins more or less straight and parallel; basal margin fully bordered, distal margin unbordered in the middle, lateral margins smooth and with short erect hairs. Elytra 1.2–1.3times longer than broad; elytra with 10 regular rows of punctures, intervals flat and without distinct punctures, only with scattered very small punctures bearing short erect setae, the punctures of the elytral rows about 4times as big as on pronotum (Fig. 19); lateral margin of elytra dentated and with short erect hairs. Modified setation on protibia see Fig. 31. Aedeagus see Fig. 21, joint parameres pentagonal with rounded tip.

Diagnosis: See under the similar *philippina* n.sp.

Distribution: Sumatra, Borneo, Nepal, Bhutan, Thailand, continental Malaysia.

4. Species key

1 Pronotum cordiform, lateral margins distinctly excavated before posterior angles (Fig. 1); antennomeres 5–9 twice as long as wide (Fig. 2); aedeagus Fig. 3, joint parameres triangular with straight sides and rounded tip ..... ***antennalis* n.sp.**
– Pronotum with straight or rounded lateral margins; antennomeres 5–9 broader, only 1.0–1.5times longer than wide **2**

2 The punctures of the elytral rows about 4–5times as big as on pronotum; lateral margins of pronotum smooth **3**
– The punctures of the elytral rows nearly of the same size or only twice as big as on pronotum; lateral margins of pronotum weakly or distinctly dentated **4**

3 Pronotum widest in the middle, lateral margins rounded towards posterior and anterior corners (Fig. 13); aedeagus Fig. 15, joint parameres triangular with somewhat extended tip ..... ***philippina* n.sp.**
– Pronotum widest in anterior third, lateral margins more or less straight and parallel (Fig. 19); aedeagus Fig. 21, joint parameres pentagonal with rounded tip ..... ***sumatrana***

4 Disc of pronotum convex, in lateral view middle of pronotum on a distinctly higher level than lateral margin **5**
– Disc of pronotum flat, in lateral view middle of pronotum only somewhat higher than lateral margin **6**

5 Body length 5.0–6.0 mm; body (Fig. 4) testaceous, distal third of each elytron with a distinct lighter patch; pronotum and elytral intervals with long erect setae; aedeagus Fig. 6, joint parameres pentagonal with rounded tip ..... ***grandis* n.sp.**
– Body length 4.0–4.3 mm; body (Fig. 10) including elytra testaceous without lighter patches; pronotum without setation and elytral intervals only with short erect setae; aedeagus Fig. 12, joint parameres pentagonal with rounded tip ..... ***convexicollis* n.sp.**

6 Elytra (Fig. 7) long oval; elytra with irregular rows of punctures, intervals with several punctures of same size as in the rows; aedeagus Fig. 9, joint parameres pentagonal with narrow and acute tip ..... ***pterolomoides***

– Elytra (Fig. 16) nearly round; elytra with regular rows of punctures, intervals only with scattered small punctures; aedeagus Fig. 18, joint parameres spatula-like with broad tip .. .. ***rotundipennis* n.sp.**

5. Reference

KASZAB, Z. (1979): Tenebrioniden aus Südindien (Coleoptera). – Acta zool. hung. **25:** 259–310; Budapest.

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